IN THE CLAIMS

1. (Original) A method for preparing an optical fiber for use as a transducer in a moisture sensor, comprising the steps of:

(a) polishing the two ends of an optical fiber;

(b) applying a heat source to a portion of said optical fiber in order to remove the cladding layer of said portion;

(c) soaking said portion of said optical fiber in a first solution in order to wash off any organic material possibly sticking on the surface of said portion of said optical fiber;

(d) soaking said portion of said optical fiber in a second solution until the surface hydroxyl groups of said portion are activated; and

(e) coating at least said portion of said optical fiber with a porous sol-gel silica solution.

2. (Original) The method of Claim 1, wherein said first solution is a $K_2Cr_2O_7/H_2SO_4$ solution.

3. (Original) The method of Claim 2, wherein said soaking step (c) is performed for at least 30 minutes.

4. (Original) The method of Claim 1, wherein said second solution is a NaOH solution.

5. (Original) The method of Claim 4, wherein said second solution is at least a 2 M NaOH solution.

6. (Original) The method of Claim 5, wherein said soaking step (d) is performed for at least 12 hours.

7. (Original) The method of Claim 1, further comprising the steps of:

cooling said optical fiber to room temperature prior to said soaking step (c); and

rinsing said portion of said optical fiber with de-ionized water both prior to and after said soaking step (d).

8. (Original) The method of Claim 1, further comprising the step of:

refrigerating said optical fiber coated with said sol-gel silica solution for at least 12 hours.

9. (Original) The method of Claim 1, further comprising the step of bending said portion of said optical fiber during said applying step (b).

10. (Original) The method of Claim 9, wherein said portion of said optical fiber is bent into a "U" shape.

11. (Original) The method of Claim 9, wherein said portion of said optical fiber is bent into an "S" shape.

12. (Original) The method of Claim 1, wherein said coating step (e) is accomplished by dipping said at least said portion of said optical fiber in said porous sol-gel silica solution.

13. (Original) The method of Claim 1, wherein said portion of said optical fiber is about 0.5 to 2 cm long.

14. (Original) The method of Claim 1, wherein said sol-gel silica solution is prepared by hydrolyzing a silicate ester with water using a catalyst.

15. (Original) The method of Claim 14, wherein said silicate ester is selected from the group consisting of tetramethyl orthosilicate and tetraethyl orthosilicate.

16. (Original) The method of Claim 14, wherein said catalyst is a mineral acid catalyst.

17. (Original) The method of Claim 1, further comprising the step of:

(f) coating said portion of said optical fiber with a thin layer of silicone rubber solution.

18. (Original) The method of Claim 17, wherein said coating step (f) comprises the steps of:

dipping said portion of said optical fiber in a silicone rubber coating solution; and

air drying said optical fiber for at least 24 hours.

19. (Original) The method of Claim 17, wherein said silicone rubber coating solution is

prepared by the steps of:

preparing a mixture comprising a silicon elastomer and a curing agent; and

diluting said mixture with toluene.

20. (Currently Amended) The method of Claim 1, further comprising the step of:

applying a second coating to said portion of said optical fiber, the second coating being [[with]] a permeable protective coating, wherein said second coating is made from at least one material selected from the group consisting of [[:]] permeable polymers, permeable plastics, permeable thermoplastics, permeable polyurethanes, and permeable gels.

21-40. (Cancelled).